Chapter 4.

Post Kantian Western Philosophy and the influence of Science on Philosophy

We saw in Chapter one that the British Philosopher John Locke maintained that "all knowledge of the world must rest finally on Sensory experience". This followed by inner reflection is what gives rise to ideas. According to him the mind is at first a blank tablet upon which experience writes. The mind possesses innate powers, but not ideas. This was quite in contrast with Descartes, Spinoza and Leibnz who had held that mind alone through its recognition of self-evident truths achieved knowledge and sensory impressions and the delineation of the nature of the external world. For this purpose, following Galileo and Descartes, he introduced the ideas of primary and secondary qualities, the primary ones being those that characterized external material objects like weight, shape, motion etc and the secondary qualities being taste, odour, colour etc that are subjective experiences of the humans. Locke maintained that the primary qualities produce ideas that genuinely represent the characteristics of the external objects and the secondary qualities produce ideas that are a consequence of the subjects' perceptual apparatus. But Berkeley who followed Locke, emphasized that a rigorous analysis clearly points out that all qualities that humans register whether primary or secondary are ultimately experienced as "ideas" in the mind". There is no definite way of knowing the precise nature of the external world. All human experience, according to Berkeley, is phenomenal, limited to appearances in the mind. "To be" is to "to be perceived by mind" (esse est percepi).

To account for the similarity of perception of different individuals, Berkeley had to bring in the idea of a "universal mind" – "mind of God". The Universal mind had the role to produce sensory ideas in individual minds according to certain patterns which are recognized by individuals as "laws of nature".

David Hume, who followed Berkeley, did not agree with either Locke's contention on representative perception nor Berkeley's identification of external objects with internal ideas as finally rooted in the mind of God. Causal relation is never directly experienced by the mind, except as experiences of coexistence or in time sequence. Even space and time according to him are not objective. These notions are abstracted by the

mind. Hume's questionings undermined even logical deductions since causality itself was questioned. This became a source of discomfort even for the scientist. For Hume, the human mind could never claim access to the world's happenings. The mind was a bundle of incohert perceptions and no objective knowledge could thus be obtained. Hume's extreme skepticism meant no God, no order, no causality, no substantial world. The order that man perceived was due to psychological habit and instinctual needs.

Kant who came on the scene in the latter half of the eighteenth century, had the task of resolving these highly contradictory view points and at the same time take cognisance of the scientific developments that had taken place. Kant was fully aware that Newton and his successors in the field of science had obtained real and definite knowledge of a kind of the external world, despite Hume's criticisms.

Another aspect of science was the success of the mathematical formulations. If laws of mathematics and logic had their origin in the human mind, what is the basis for saying that the actual world should conform to these laws? It is this correspondence that science had vindicated. Kant turned the tables around and said that the world that Science explicated was the one that mind's own cognitive apparatus had created. For Kant, the mind was not just a passive receiver of sense data. The mind actively "digests" and "structures" the sense data. Thus the world that is available to the human mind is the one that is already organized by it in accordance with its own processing of the sensing data. The data gets sorted out into the mind's "categories" and "framework" of cognition. In short it is not the mind that conforms to things, but on the contrary things conform to mind.

According to Kant, space and time are not drawn from experience, but are presupposed in experience. They constitute the invariable context in which events are observed. He was categorical that space and time were not characteristic of the world itself, but they came into effect in the act of human observation and therefore grounded in the mind. Space and time, as well as causation are a priori. Other categories like substance, quality, relation etc were also a priori.

→ Hegel sought to relate and unify of man and nature, spirit and matter, human and divine, time and eternity. For him through the dialectic process everything about reality could be comprehended. Hegel saw human reason as an expression of God's mind.

Nietzsche (1844-1900) the German Romanticist talked of the self creating power of the "will" of man and how "God who had long been projected to the beyond could be born within the human soul." The psychologists Freud (1856-1939) and Jung (1875-1961) were influenced to a great extent by the German Romanticism that began with Goethe and flowed through Nietzsche. Freud introduced the idea of the unconscious to explain memories of traumatic experiences in hysterical cases. He was of the opinion that analysis of dreams could lead to an understanding of the unconscious. Jung on the other-hand claimed evidence for the collective unconscious structured into archetypes that had cultural roots. Jung was emphatic however that psychology can reveal nothing with certainity about the universe and reality as such.

Schopenhauer -

Schelling transformed the idea of God to that of the "absolute"; while Fichte insisted on "divine absolute". The idea of dialectics was introduced by Hegel, each entity carrying its own negative or opposite and the combination of the two leading to a higher entity. Being contained Non-Being and the combination to a higher category. The highest category according to Hegel was the "Absolute Idea" from which "Nature" was deduced. A synthesis of "Nature" and "Absolute Idea" led to the "Absolute Spirit" which is the end.

Schopenhauer (1788-1840) introduced the ~~idea of~~ doctine of "the will" - the most dynamic element known to us as volition, as the first principle. According to him every phenomenon of the universe, wherever we may look is resolved into will. It is nothing but will which as physical, chemical and organic force intrudes into space, time and causality, thereby appearing in all changes of bodies and in bodies themselves. According to Schopenhauer: All is will.
He was against the idea that the complete knowledge of the world and the purpose of the world is to be found in reason alone. "Reason can only systematize the material brought to it by experience so that full meaning of reality can be known only by experience and not in the abstractions of mere thought".

* → (In Europe)

Despite the general progress in living conditions and material benefits due to the Scientific revolution which began in the 15th. Century and the industrial revolution in the 19th. Century, the early part of the ~~Centur~~ 20th. Century was characterized by downward trend in intellectual and cultural life bringing about the distressing fall in moral values, the increase of crime world wars and Scientific not providing any definite evidence for the presence of a God. All this resulted in the birth of a new kind of philosophy termed postmodernism that reflected itself in pragmatism, existentialism, Marxism etc. in all of which the focus had shifted to, above all a priority for concrete experience by individuals. Truth became a subjective experience connected with human inner feelings, images, sensations, memories and these had to be meaningful to be true. Objective essences or things-in-themselves are not directly accessible. Reality is not a solid self-contained given, but a fluid unfolding process and its ramification depends on one's own actions and beliefs. There is a continual interaction between the knowing subject who is never separated from his own body and the external world.

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For the Existentialists

According to Duhem (1861-1916), the French philosopher and theoretical physicist, metaphysics is concerned with explanation of "Being" - to strip Reality of appearances covering ~~it like~~ it like a veil in order to see the bare Reality itself. A physical theory does not explain the laws though it coordinates them systematically, nor do the laws explain Reality. What we know are relations between sensations. The connection of these to Reality is a matter of faith.

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For the Existentialists, beginning with the German philosophers Husserl (1859-1938), Heidegger (1889-1976) followed by the French philosophers Sartre (1905-1980) and Merleau Ponty (1908-1961), the world exists before the study begins - Existence before Essence.

In the earlier theistic philosophers, Descartes, Leibnitz etc, God the Creator had the concept of man and other Creation in his mind. In the later philosophers of Diderot, Voltaire and Kant, each man was a particular example of a universal concept, man. Essence of man preceded the Creation or existence.

In the atheistic existentialism of Heidegger and Sartre man exists first, turns up and appears on the scene and then defines himself. Existence is before essence. Thus man is nothing else than what he makes of himself. Each man is responsible not only for himself, but also for other men.

The British Philosopher Herbert Spencer (1820-1903), a positivist of the 19th. Century, believed that Reliable knowledge is to be found only in the Sciences, was to a great extent a Lamarkian. He did not subscribe to the idea that Species evolved through Chance mutation but only through adaptation to environment. He held that there is one absolute Reality of which the Subject and object are mere Signs.

Bertrand Russel (1872-1970) ~~was~~ another highly influential British philosopher, who even as an Idealist held that Scientific knowledge was the best available and that philosophy should be built around it. He is one of the few Western modern philosophers who maintained (other → "philosophy bakes no bread" or arrives at any definitive ~~Conclusions~~ conclusions about Reality, but has an effect on the life of those who pursue it. He emphasised on the need for food for the mind ~~and~~ which ~~has~~ is what philosophy provided. He talks of the Union of the Universe and the Mind." Philosophy is to be Studied, not for the Sake of definite answers to its questions, since no definite answers can as a Rule, be known to be true, but Rather for the Sake of the questions themselves; because these questions enlarge our Conception of what is possible, enrich our intellectual imagination and diminish the dogmatic assurance which closes the mind against Speculation; but above all because, through the greatness of the Universe which philosophy contemplates, mind also is rendered great, and becomes capable of that Union with the Universe which constitutes its highest good"

Experience, according to Kant, is the construction of the mind imposed on sensation and the world exists only to the extent that man constructs it. Reality for man is necessarily one's own making. The reality of the external world is therefore something that one can never be certain of.

Kant emphasised ~~on~~ the necessity of the combined operations of sensing and thinking to know something about the world. The important aspect is that these have to be simultaneous for interpretation. Man's knowledge of the external reality was essentially a product of his own cognitive apparatus. The laws of nature were not independent, but depended on the internal organization carried out by man's mind in interaction with external inputs. The necessity for a fully understanding of the formal structure of the mind and its modes of operation was the highlight of Kant's philosophical endeavour.

(1770-1831)

Kant's successors in Germany, Fichte, Schelling and Hegel to obviate the problem caused by the inaccessibility of the Noumenon or the-thing-in itself, brought in the idea of a "universal mind", "an absolute ego" – a transcendental and supra-individual principle that spontaneously manifests itself in the world and knows itself through the mind of man. They identified the cognitive categories of Kant with ontological categories of the universe. According to them both the content and the form were determined by the Universal Mind.

In the last two hundred years after Kant's death, with the remarkable developments in the field of Science, there has been considerable change, as pointed out in the previous chapter, in our understanding of the external world and the process that go on there, in addition to much greater and deeper ~~under~~standing of the human brain and the processes that go on there. First ..... of all the Universe is orders of magnitude larger and very much more complicated in terms of its constituents and processes. Our concepts of space, time, causality, determinism have, radically changed. Even the concepts of force, field, vacuum have changed. Mass and Energy have been unified. Many more laws nature have been discovered and the importance of the breakdown of these laws under certain circumstances, but subject to certain restrictions ~~restructuring~~

have become evident and these are connected with such prime questions like creation of matter, creation of the universe etc. Scientific explanations require a reductionistic as well as a holistic, individual as well as statistical interpretations ~~in explaining different phenomena~~.

The most significant development of the 20th century has been the discovery of fundamental particles which are the ultimate constituents of matter and radiation and carriers of electromagnetic, weak and strong forces as we discussed in the previous chapter. Despite the discovery of these particles and elucidation of their properties, some of the leading theoretical physicists of the 20th century have in no uncertain terms ~~have~~ favoured an Idealist philosophy akin to that put forward by Plato in the fourth century BC. Werner Heisenberg, who played a major role in the development of Quantum Mechanics, says "…. In spite of the tremendous success that concept of the atom has achieved in modern science, Plato was very much nearer to the truth about the structure of matter than Leucippus or Democritus."

While behaviour of the elementary constituents can be described only in terms of quantum theory, the problem is that quantum theory itself can be described only in ~~the~~ a mathematical language and the ordinary intuitive concepts we use to describe physical objects and phenomena like position, velocity, colour, size and so on, when applied to individual particles lose their validity in the classical sense. Heisenberg states "The smallest units of matter are, in fact, not physical objects, in the ordinary sense of the word; they are "forms", "structures" or in Plato's sense – Ideas which can be unambiguously spoken of only in the language of mathematics. Democritus and Plato both had hoped that in the smallest units of matter they would be approaching the "one" the unitary principle that governs the course of the world. Plato was convinced that this principle can be expressed and understood in mathematical form. The central problem of theoretical physics nowadays is the mathematical formulation of the natural laws underlying the behaviour of elementary particles.

According to Plato, "material things are the copies, the shadow images of ideal shapes in reality. This pure ideal being is apprehended not by senses, but through acts of mind. The ideal being is not in anyway in need of man's thought in order to be brought forth by him. On the contrary, it is the true being of which the corporeal world and human thinking are reproductions.

The famous astronomer Kepler also talks about innate archetypes that bring about recognition of forms. Wolfgang Pauli (1900-1958) another eminent quantum physicist says "The process of understanding in nature, i.e., in becoming acquainted with new knowledge, seems therefore to reset upon a correspondence, a coming into congruence of the pre-existent internal images of human psyche with external objects and their behaviour. Kepler in fact speaks of Ideas which preexist in the mind of God and imparted accordingly upon the soul as the image of God. These primal images, Kepler calls archetypes". In Phaedrus, Plato says "The soul remembers as it were something it had unconsciously possessed all along ..... The soul is awe-stricken and shudders at the sight of beautiful for its feels something is evoked in it that was not imparted to it from without senses, but has always been already laid down in a deeply unconscious region".

Another founding father of quantum mechanics, Erwin Schrodinger (1887-1961) also subscribed strongly to the idea of oneness says: "The same elements compose my mind and the world. This situation is the same in every mind and its world, in spite of the unfathomable abundance of "cross-references" between them. The world is given to me only once, not one existing and one perceived. Subject and object are only one. The barrier between these cannot be said to have broken down as a result of recent experiments in the physical sciences, for this barrier does not exist".

Schrodinger identifies this one with the 'ego', and "I" and "Consciousness". According to him "the reason why our sentient, percipient and thinking ego is met no where in the scientific world picture is – it is itself the world picture. It is identical with the whole and therefore cannot be contained as part of it". He emphasises "I" am the

person, if any, who controls the motion of atoms according to laws of nature. This "I" in the Christian faith is God Almighty and in Vedantha it is Atman = Brahman = Consciousness. I is the ground stuff upon which all experiences and memories are collected. "Hence this life of yours which you are living is not merely a piece of entire existence, but is in a certain sense the whole".

Sir James Jeans (1877-1946) an eminent physicist of the early part of the century, who later became famous as science writer and the author of the books "Philosophy of Physics", "the Mysterious Universe" etc, is quite categorical in his views: "To my mind, the laws that Nature obeys are less suggestive of those which a machine obeys in its motion than those which a musician obeys in writing a fugue, or a poet in composing a sonnet. The motion of electrons and atoms do not resemble those of the parts of a locomotive so much as those of the dances in a cotillion. And if "the true essences of substances" for forever unknowable, it does not matter whether the cotillion is danced at a ball in real life or on a cinematography screen or in a story of Boccasio. If all this is so, then the universe can be best pictured, although still very imperfectly and inadequately as consisting of pure thought, the thought of what, for want of a wider word, we must describe as a mathematical thinker". Streams of knowledge are heading towards a non-mechanical reality. Substantial matter resolves itself into a creation and manifestation of mind. "Mind has to be hailed as the creator and governor of the realms of matter – not of course our individual minds, but the mind in which atoms out of which our individual minds have grown and exist as thoughts".

Arthur Eddington, (1882-1944) the famous British astronomer, astrophysicist, and author of several popular books on science was also quite categorical in his assessment of what the ultimate reality is. "..... the stuff of the world is mind-stuff. The mind stuff of the world is of course, something general than our individual conscious minds, but we may think of its nature as not altogether foreign to the feelings in our consciousness". Eddington goes on to say "the realistic matter and fields of force of the former physical theory (prior to quantum theory) are altogether irrelevant – except in so far as the mind stuff itself has spun these imagings. The symbolic matter and fields

of force of the present day theory are more relevant, but they bear to it the same relation that the bursar's account bears to the activity of the college". Our bodies are more mysterious than our minds which we know by direct self-knowledge.

John Wheeler, a student of Niels Bohr, and a renowned astrophysicist, while emphasizing the participatory role of man in the creation of the universe and reality says "Man is not a mere spectator to some vast cosmic clock work nor trivial cog in a machine whose every action is preordained. Man might be an active and vital player in determining what is real …. Conscious mind is crucially involved in establishing what is real. That which reaches our sense is at best a confusion of phantasmal energies – not sights, sounds or any coherent qualities that we project on to the physical world until mental construction takes place, reality must wait in the wings."

According to quantum physics the wave function of a particle, a purely mathematical thing is the only reality that is there until observation takes place.

Einstein, in his special theory of relativity, showed that matter and energy are equivalent and in his general theory regarded matter as being constituted of space in which the field is intense.

The Austrian born, British philosopher Karl Popper (1902-1994) agreed with Kant that Science can never produce knowledge that is certain. Any theory can never be viewed as final. New facts have several times upset old theories which were thought to be final. According to Popper, falsiability is the most important criterion for acceptability and rejection of Scientific truths rather than just verifiability. Proof against falsiability is most important. Science is therefore tentative in its conclusions. Reinterpretation in a new framework is always a possibility. In that sense human ignorance is infinite.

Thomas Kuhn (1922-) analysing the history of Science doubted the prevalence of adequate self-criticism among Scientists and in arriving at unbiased and valid conclusions from the data. He was particularly upset by the tendency to interpret the data to validate pet theories and paradigms of their choice and liking. Some of the relevant data was even ignored or ~~dete~~ deleted for this purpose. He pointed out that major developments in Science have taken place not by continuous accumulation of data, but by sudden flashes of genius, and serendipitous discoveries. A significant point that he made

Thirdly Less of special relevance to philosophy is that science is not a linear progress but is one characterized by radical shifts of vision in which non-rational and non-empirical factors play a crucial role. The knowledge that one acquires through science is tentative, contextual, relative and based on prevalent theories and expectations. It also depends on belief systems and the cultural milieu. According to him the post-Newtonian world order is neither intuitive nor internally consistent and coherent.

Peter Medawar ( ) in his book "The Limits of Science" argues that we must look to literature, religion and philosophy, not science for answers to questions about the first and last of things.

Post Kantan Western Philosophy and the influence of Science on philosophy

We saw in Chapter one that the British Philosopher John Locke maintained that "all knowledge of the world ~~first~~ must rest finally on Sensory experience" This followed by inner reflection is what gives rise to to ideas. According to him the mind is at first a blank tablet upon which experience writes. The mind possesses innate powers, but not ideas. This was quite in contrast with ~~Spinoza~~ Descartes, Spinoza and Leibniz who had held that mind alone through its recognition of self-evident truths achieved knowledge. and Sensory ~~knowledge~~ input was not relevant. The question that bothered Locke was to establish the connection between Sensory impressions and the ~~external world~~ delineation of the nature of the external world. For this purpose, following Galileo and Descartes, he introduced the ideas of primary and Secondary qualities, the primary ones being those that characterized external material objects like Length, Shape, motion etc and the Secondary qualities being taste, odour, colour etc. that are subjective experiences of the humans. Locke maintained that the primary qualities ~~are~~ produce ideas that genuinely represent the characteristics of the external objects and the Secondary qualities produce ideas that are a consequence of the subject's perceptual apparatus..

But Berkeley who followed Locke, emphasized that a rigorous analysis clearly points to "all qualities that humans register whether primary or secondary are ultimately experienced as "ideas" in the mind". There is no definitive way of knowing the precise nature of the external ~~world~~. world. All human experience, according to Berkeley, is phenomenal, limited to appearances in the mind. "To be" is to "to be perceived by mind" (esse est percepi).

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Reality for man is necessarily one's own making. The reality of the external world is therefore something that one can never be certain of.

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The necessity for a fully understanding of the formal structure of the mind and its modes of operation was the highlight of Kant's philosophical endeavours.

Kant's successors in Germany, Fichte, Schelling and Hegel[x] brought in the idea of a "universal mind", "an absolute ego" - a transcendental and supraindividual principle that spontaneously manifests itself in the world and knows itself through the mind of man. ~~Augustus Comte brought in the idea of a "Great Being" who acted through~~

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~~individuals~~. They identified the Cognitive Categories of Kant with ontological Categories of the Universe. According to them both the Content and form were determined by the Universal Mind.

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The impact and consequences of these developments in philosophy can be best described by those some of the leading scientists have said.

The most significant development of the 20th. Century has been the discovery of a variety of fundamental particles which are the ultimate constituents of matter and radiation and the carriers of ~~force~~, electromagnetic, ~~and~~ weak and strong forces as we discussed in the previous Chapter. Despite the discovery of these particles and elucidation of their properties, some of the leading theoretical physicists of the 20th. Century have in no uncertain terms have favoured an Idealist philosophy akin to that put forward by Plato in the fourth Century BC. Werner Heisenberg, who played a major role in the development of Quantum Mechanics, says "... in spite of the tremendous success that concept of the atom has achieved in modern Science, Plato was very much nearer to the truth about the structure of matter than Leucippus or Democritus.

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mathematics. Democritus and Plato both had hoped that in the smallest units of matter they would be approaching the "one" the unitary principle that governs the course of the world. Plato was convinced that this principle can be expressed and understood in mathematical form. The central problem of theoretical physics nowadays is the mathematical formulation of the natural law underlying the behaviours of elementary particles

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Sir. James Jeans, (1877-1946) an eminent physicist of the early part of the Century, who later became famous as Science writer and the author of the books "Philosophy of physics", "the mysterious Universe" etc, is quite categorical in his views: "To my mind, the laws that Nature obeys are less suggestive of those which a machine obeys in its motion than those which a musician obeys in writing a fugue, or a poet in composing a sonet. The motion of electrons and atoms

do not resemble those of the parts of a locomotive so much as those of the dances in a cotilion. And if ~~true~~ "the true essences of substances" for forever unknowable, it does not matter whether the cotilion is danced at a ball in real life or on a cinematograph screen or in a story of Boccasio. If all this is so, then the universe can be best pictured, although still very imperfectly and inadequately as consisting of pure thought, the thought of that, for want of a wider word, we must describe as a "mathematical thinker"

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Einstein, in his Special theory of relativity, showed that matter and energy are equivalent and in his general theory regarded matter as being constituted of space in which the field is intense

The last remark of Wheeler is very significant. "All that again will be reduced to empty space. It now behooves the life scientists to figure out how the aspects of life and consciousness arise from the empty space or matter the quantum mechanical vacuum.

To establish that all matter and all physical phenomena arise from vacuum the physicists had to carry out a whole sequence of reductionistic experiments and resort to the insights from theories. particularly in the 20th. Century. The challenge now is for the life scientists of the 21st. Century to carry out something similar in the field of the emerging Quantum Biology. New non-invasive technologies have to be developed to go deeper into the happenings during the life processes - far far deeper than molecular structures.

Thank You.

negative ~~processes~~ pressure exercised ..... by dark energy on Higgs Field that has filled in the entire universe.

Therefore, it stands to reason to think that there could be some what subtle links between life processes and quantum vacuum processes especially since the quantum vacuum is not a closed system with all its component fields fully determined and also animate matter is part of the universe and was part of the evolution. In as much as a mass giving field like the Higgs had to be made part of the vacuum and this, has as we have seen served so many purposes, is it not possible that there could be other fields in the vacuum which could be responsible for life and consciousness, not necessarily those that have resulted in the constitutions of the inanimate world and the inanimate part of the animate world. To establish the existence of the Higgs boson and the Higgs field, a ten billion dollar accelerator has been constructed and very elaborate experimental set up with computer control for registration and analysis of the trillion events data ---------- is going in at CERN in Geneva and at many other places in the world; as an international effort. The 20th century researches undoubtedly led the physicists to "vacuum quantum physics" in ~~serve~~ search of the substratum that accounts for "everything physical." May be the 21st century will lead to "quantum vacuum biology" in the attempt to solve the most outstanding qualities – What is life? What is consciousness?